"Developments of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipe line at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package:09)"

Fourth and Final Bill

Quality Control Reports

BOOK NO-04

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QC ABSTRACT

IE OF WORK: Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka ion (Package no: 09)

	Item Of Work	Name of Test	Frequency of Test/Quantity	Executed Quantity	Number of Tests Required	Number of Tests Conducted
		Materials				
1	Cement	Fineness by dry sieving	One Test		1	1
		Finess by Air permeablity method	One Test		1	1
		Density	One Test		1	1
		Standard Consistency	One Test		1	1
		Initial Setting time	One Test		1	1
		Final Setting time	One Test		1	1
		Soundness (Le Chatelier's Method)	One Test		1	1
		Compressive Strength	One Test		1	1
2	Coarse aggregate(40 mm down size)	SIEVE ANALYSIS	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		Specific Gravity	One Test		1	1
		Bulk Density(Loose)	One Test		1	1
		Bulk Density(Compacted)	One Test		1	1
		Water Absorption	One Test		1	1
3	Coarse aggregate(20 mm down size)	SIEVE ANALYSIS	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		Specific Gravity	One Test		1	1
		Bulk Density(Loose)	One Test		1	1
		Bulk Density(Compacted)	One Test		1	1
		Water Absorption	One Test		1	1
		Aggregate crushing Value	One Test		1	1
		Aggregate Impact Value	One Test		1	1
4	Fine aggregate	SIEVE ANALYSIS	One Test		1	1
		Water Absorption	One Test		1	1
		Specific Gravity	One Test		1	1
		Material finer than 75 micron	One Test		1	1
5	Steel	Bend test	One Test		1	1
		Tensile Test	One Test		1	1
		Yield Test	One Test		1	1
		ReBend test	One Test		1	1
6	KERB	Core Compressive strength	One Test		1	1
		Corrected Cylinder Compressive strength	One Test		1	1
		Equivalent Cube Compressive strength	One Test		1	1
7	Precast (100mm)	Core Compressive Strength	One Test		1	1
		Corrected Cylinder Compressive Strength	One Test		1	1
		Equivalent Cube Compressive Strength	One Test		1	1

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	Precast (200mm)	Core Compressive Strength	One Test		1	1
		Corrected Cylinder Compressive Strength	One Test		1	1
		Equivalent Cube Compressive Strength	One Test		1	1
	RCC(M20)	Compressive Strength(7days and 28days)	5 set /150-200 cum	132.61	10	10
	GSB	SIEVE ANALYSIS	One Test		2	2
	WMM	Sieve Analysis	One Test		6	6
		Impact Value	One Test		1	1
		Flakiness Index	One Test		2	2
		Elongation Index	One Test		2	2
2	BC	SIEVE ANALYSIS	One Test		1	1
		STRIPPING VALUE	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		IMPACT VALUE	One Test		1	1
		Specific gravity	One Test		1	1
		Water Absorption	One Test		1	1
		Marshal Stability	One Test		1	1
		Marshal flow	One Test		1	1
		Percent air Voids	One Test		1	1
		Percent Voids in mineral	One Test		1	1
		Percent Voids filled with Bitumen	One Test		1	1
		Density	One Test		1	1
		Gradation	One Test		1	1
13	BITUMEN	Ductility	One Test		1	1
		Softening Point	One Test		1	1
		Penetration	One Test		1	1
		Flash Point	One Test		1	1
		Fire Point	One Test		1	1
14	TACK COAT	Rate of spread	One Test		1	1

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Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Date: 05-02-22

Lab ID	:	CP-2022-03-29-44
Project Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
Agency	:	Sri K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
Customer's Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
Date of Receipt	:	03-02-22
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 (Part 1,2 3,4,5, 6,11):1988 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6
Date of test	:	04-02-22
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	2.82	–
2	Finess by Air permeablity method (m^2/kg,Min)	271.9	225m^2/kg, Min
3	Density (gm/cc)	3.15	–
4	Standard Consistency (%)	29.0%	Not specified
5	Initial Setting time	155 minutes	Not less than 30 minutes
6	Final Setting time	245 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	1.5 mm	Not more than 10 mm

• The results obtained are satisfactory as per standard requirements.

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2022-03-29-44** **Date: 05-02-22**
Project Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
Agency	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
Customer's Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
Date of Receipt	:	03-02-22
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	03-02-22

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	754	754	5.0	95.0	90-100
3	20 mm	6592	7346	49.0	51.0	30-70
4	10 mm	4759	12105	80.7	19.3	10-35
5	4.75 mm	2595	14700	98.0	2.0	0-5
6	Pan	300	15000	100.0	0	---

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2022-03-29-44** **Date: 05-02-22**
Project Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
Agency	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
Customer Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
Date of Receipt	:	03-02-22
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids, Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	03-02-22

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	223	223	4.5	95.5	90-100
3	10 mm	2174	2397	47.9	52.1	25-55
4	4.75 mm	2271	4668	93.4	6.6	0-10
5	Pan	332	5000	100	0	-

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TEST REPORT OF FINE AGGREGATE

ab ID : CP-2022-03-29-44

Date: 05-02-22

HYSICAL PROPERTIES

.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	2.18	–
2	Specific Gravity	2.54	–
3	Material finer than 75 micron(%)	3.7	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

The results obtained are satisfactory as per standard requirements.

FOR CIVIL Pro.

CIVIL Pro Sig Date BANGALORE

R KARTHIK RECHAN
Authorized Signatory
Quality Manager

****End of Report****

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TEST RESULTS OF STEEL

ID	:	CP-2022-03-29-44 **Date: 05-02-22**
ect Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
ncy	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
tomer's Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
e of Receipt	:	03-02-22
nple Type	:	Sunvik
erence to BIS codes	:	IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2012.
te of test:	:	04-02-22

.No	Identification of sample	Grade of the sample	Diameter of the steel bar	Weight of the sample	Yield stress	Tensile strength	Elongation	Bend test	Rebend test
			(mm)	(kg/m)	(N/mm2)	(N/mm2)	(%)		
1	Sunvik	Fe500	8	0.391	512	652	20.0%	Satisfactory	Satisfactory
2	Sunvik	Fe500	10	0.616	528	672	20.0%	Satisfactory	Satisfactory
3	Sunvik	Fe500	12	0.888	544	668	20.0%	Satisfactory	Satisfactory

The results obtained are satisfactory as per standard requirements.

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R KARTHIK RECHAN
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End of Report

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE KERB STONE

Date: 12-03-22

b ID	:	CP-2022-03-29-44
oject Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No 03 and 04 of Yelahanka Division (Package no: 09)
gency	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
ustomer's Reference	:	BBMP/EE/YNK.D/EPMT-05/W O/186/2020-21
ate of Receipt	:	07-03-22
ample Type /Size	:	CC Kerb Stone/ 450*165*400mm
eference to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete
Date of test	:	08/03/2022

Sl. No.	Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
		(mm)	(mm)	Kg	(Sq.mm)	(KN)	(N/mm2)	(N/mm2)	(N/mm2)
1	A	100.01	165.51	2.864	7854	142.1	18.1	18.1	22.6
2	B	100.03	165.49	2.793	7857	145.2	18.5	18.5	23.1
3	C	100.01	165.50	2.815	7854	145.1	18.5	18.5	23.1

* The results obtained are satisfactory as per standard requirements.

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Quality Manager

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TEST REPORT OF CEMENT CONCRETE CUBES

: CP-2022-03-29-44 **Date: 02/03/2022**

lame : Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)

: Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094

er's Reference : BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21

Receipt : 25-02-22

er ID : Drain Concrete Bottom Raft

Type /Size : 150X150X150 mm

grade/Age : M20 / 7 Days Compressive Strength

nce to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

f test : 02/03/2022

Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
Drain Concrete Bottom Raft	M20	23/02/2022	02/03/2022	149.78 X 151.08 X 150.98	22629	8.245	410.8	18.2	18.3
Drain Concrete Bottom Raft	M20	23/02/2022	02/03/2022	150.74 X 149.31 X 151.54	22507	8.867	412.5	18.3	
Drain Concrete Bottom Raft	M20	23/02/2022	02/03/2022	149.44 X 151.63 X 149.82	22659	9.099	420.2	18.5	

The results obtained are satisfactory as per standard requirements.

Deputy Executive Engineer
Ward No.30 & 31
B.B.M.P. Yelahanka

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TEST REPORT OF CEMENT CONCRETE CUBES

ID	:	CP-2022-03-29-44 **Date: 04/03/2022**
ct Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
ncy	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
tomer's Reference	:	BBMP/EE/YNK D/EPMT-05/W.O/186/2020-21
e of Receipt	:	28-02-22
tomer ID	:	Drain Concrete Side Wall
ple Type /Size	:	150X150X150 mm
ple grade/Age	:	M20 / 7 Days Compressive Strength
ference to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl 5
te of test	:	04/03/2022

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Drain Concrete Side Wall	M20	25/02/2022	04/03/2022	151.79 X 151.77 X 149.05	23037	8.346	427.4	18.6	18.5
2	Drain Concrete Side Wall	M20	25/02/2022	04/03/2022	150.27 X 149.68 X 149.74	22493	8.986	420.4	18.7	
3	Drain Concrete Side Wall	M20	25/02/2022	04/03/2022	149.74 X 151.30 X 151.25	22657	8.706	412.4	18.2	

* The results obtained are satisfactory as per standard requirements.

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Quality Manager

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TEST REPORT OF CEMENT CONCRETE CUBES

ID	:	CP-2022-03-29-44
ect Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No.03 and 04 of Yelahanka Division (Package no: 09)
ncy	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
tomer's Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
e of Receipt	:	28-02-22
tomer ID	:	Drain Concrete Side Wall
mple Type /Size	:	150X150X150 mm
mple grade/Age	:	M20 / 7 Days Compressive Strength
ference to BIS codes	:	IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl 5
te of test	:	04/03/2022

Date: 04/03/2022

SL No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Drain Concrete Side Wall	M20	25/02/2022	04/03/2022	151.61 X 149.17 X 149.29	22616	8.593	423.8	18.7	18.5
2	Drain Concrete Side Wall	M20	25/02/2022	04/03/2022	151.76 X 149.49 X 149.43	22686	8.278	422.9	18.6	
3	Drain Concrete Side Wall	M20	25/02/2022	04/03/2022	150.94 X 149.65 X 151.55	22587	9.006	409.5	18.1	

* The results obtained are satisfactory as per standard requirements

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Certificate No.: TC-5548

TEST RESULTS OF GRADATION FOR GSB
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	CP-RW-2019-02-15-31 **Date: 04-04-22**
Project Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
Agency	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
Customer Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
Date of Receipt	:	30-03-22
Type of Mix	:	GSB (Granular Sub Base)
Date of test	:	30-03-22
Oven Dry Weight	:	10000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec. Limit Vide Table 400.1 MORTH Specification
75	0	0	0	100	100
53	993	993	9.93	90.07	80-100
26.5	1675	2668	26.68	73.32	55-90
9.5	1286	3954	39.54	60.46	35-65
4.75	1485	5439	54.39	45.61	25-55
2.36	1772	7211	72.11	27.89	20-40
0.425	1662	8873	88.73	11.27	10-25
0.075	1127	10000	100.00	0.00	0-5

TESTS ON FILLER SCREEN MATERIALS

Sl no	Particulars	Test results	Spec.Limit Vide Table
1	Liquid Limit, %	22.35%	Maximum 25
2	Plasticity index, %	Non plastic	Maximum 6

* The results obtained are satisfactory as per standard requirements.

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Certificate No.: TC-5548

TEST RESULTS OF GRADATION FOR WMM

ab ID	:	CP-RW-2022-03-29-44 Date: 07-04-22
oject Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
gency	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
ustomer Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
ate of Receipt	:	05-04-22
ype of Mix	:	WMM (Wet Mix Macadam)
ate of test	:	05-04-22
ven Dry Weight	:	11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	310	310	2.8	97.2	95-100
22.4	2259	2569	23.4	76.6	60-80
11.2	2179	4748	43.2	56.8	40-60
4.75	2251	6999	63.6	36.4	25-40
2.36	1621	8620	78.4	21.6	15-30
0.6	623	9243	84.0	16.0	8-22
0.075	1338	10581	96.2	3.8	0-5

* The results obtained are satisfactory as per standard requirements.

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R.KARTHIK RECHAN
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Quality Manager

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Certificate No.: TC-5548

TEST RESULTS OF GRADATION FOR WMM

Lab ID : CP-RW-2022-03-29-44 Date: 09-04-22

Project Name : Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)

Agency : Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.

Customer Reference : BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21

Date of Receipt : 07-04-22

Type of Mix : WMM (Wet Mix Macadam)

Date of test : 07-04-22

Oven Dry Weight : 11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	312	312	2.8	97.2	95-100
22.4	2269	2581	23.5	76.5	60-80
11.2	2182	4763	43.3	56.7	40-60
4.75	2256	7019	63.8	36.2	25-40
2.36	1635	8654	78.7	21.3	15-30
0.6	638	9292	84.5	15.5	8-22
0.075	1372	10664	96.9	3.1	0-5

* The results obtained are satisfactory as per standard requirements.

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TEST RESULTS OF GRADATION FOR DBM
(IS 2386:(Part 1) 1963 (RA2011)

D	:	CP-RW-2022-03-29-44 **Date: 21-04-22**
ct Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
cy	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
mer Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
of Receipt	:	19-04-22
of Mix	:	DBM-Plant (Dense Bituminous Macadam)
of test	:	19-04-22
ght of Sample	:	5000 Grams

Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10 (grading -2)
37.5	0	0	0	100	100
26.5	250	250	5.00	95.00	90-100
19	350	600	12.00	88.00	71-95
13.2	475	1075	21.50	78.50	56-80
4.75	1750	2825	56.50	43.50	38-54
2.36	400	3225	64.50	35.50	28-42
0.3	1350	4575	91.50	8.50	7-21
0.075	250	4825	96.50	3.50	2-8
PAN	200	5025	0.00	0	0

he results obtained are satisfactory as per standard requirements.

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Certificate No.: TC-5548

PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR DENSE BITUMINOUS MACADAM

Lab ID : CP-RW-2022-03-29-44 Date: 22-04-22

Project Name : Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)

Agency : Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.

Customer Reference : BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21

Date of Receipt : 19-04-22

Type of Mix : DBM (Dense Bituminous Macadam)

Date of test : 19-04-22

Table 500-6 : Physical Requirements fo Coarse Aggregate for Dense Bituminous Macadam

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	11.0	Combined Flakiness & Elongation Index for DBM is Maximum 35%	IS 2386 Part I
	Elongation Index	10.0		
Strength	Aggregate Impact Value	21.0	Maximum 30%	IS 2386 Part IV
Specific gravity	Specific gravity	2.58	Maximum 2.7	IS 2386 Part III
Water Absorption	Water Absorption	0.38	Maximum 2%	IS 2386 Part III

* The results obtained are satisfactory as per standard requirements

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	CP-RW-2022-03-29-44 Date: 22-04-22
Project Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
Agency	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
Customer Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
Date of Receipt	:	19-04-22
Type of Mix	:	DBM(Dense Bitumnous Macadam)
Date of test	:	19-04-22
Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

* The results obtained are satisfactory as per standard requirements.

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Certificate No.: TC-5548

TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Date: 22-04-22

Lab ID : CP-RW-2022-03-29-44

Project Name : Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)

Agency : Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.

Customer Reference : BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21

Date of Receipt : 19-04-22

Type of Mix : DBM(Dense Bitumnous Macadam)

Date of test : 19-04-22

Type of Binder : 60/70

% of Binder Used : 5.0%

Weight of Aggregate : 200.0 gm

Weight of Binder : 10.0 gm

Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

*The results obtained are satisfactory as per standard requirements.

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ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಬೆಂಗಳೂರು-106

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Certificate No.: TC-5548

TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : CP-RW-2022-03-29-44 Date: 30-04-22

Project Name : Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)

Agency : Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.

Customer Reference : BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21

Date of Receipt : 27-04-22

Type of Mix : BC(Bitumenous Concrete)

Date of test : 27-04-22

Type of Binder : 60/70

% of Binder Used : 5.0%

Weight of Aggregate : 200.0 gm

Weight of Binder : 10.0 gm

Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.3	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

* The results obtained are satisfactory as per standard requirements.

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : CP-RW-2022-03-29-44 Date: 30-04-22

Project Name : Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)

Agency : Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.

Customer Reference : BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21

Date of Receipt : 27-04-22

Type of Mix : BC (Bituminous Concrete)

Date of test : 27-04-22

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.14	11.13	10KN(min)
2	Marshal flow at 60°C, mm	3.52	3.51	2-4
3	Percent air Voids	4.82	4.83	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.28	14.26	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.87	71.63	65-75
6	Density, g/cc	2.25	2.26	--

* The results obtained are satisfactory as per standard requirements.

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Certificate No.: TC-5548

Lab ID : CP-RW-2022-03-29-44

Date: 12-05-22

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 472

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.7	62.3	53-71
2.36	88	266	56.4	43.6	42-58
1.18	29	295	62.5	37.5	34-48
0.6	11	306	64.8	35.2	26-38
0.3	46	352	74.6	25.4	18-28
0.15	45	397	84.1	15.9	12-20
0.075	55	452	95.8	4.2	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 473.5

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.8	99.2	90-100
9.5	62	66	13.9	86.1	70-88
4.75	112	178	37.6	62.4	53-71
2.36	88	266	56.2	43.8	42-58
1.18	29	295	62.3	37.7	34-48
0.6	11	306	64.6	35.4	26-38
0.3	46	352	74.3	25.7	18-28
0.15	45	397	83.8	16.2	12-20
0.075	55	452	95.5	4.5	4-10

* The results obtained are satisfactory as per standard requirements.

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ಯಲಹಂಕ ಉಪವಿಭಾಗ.
ಜ.ನ.ಪ. ಬೆಂಗಳೂರು-106

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Certificate No.: TC-5548

Format No: CP/TF/01

TEST REPORT ON BITUMEN

Date: 14-04-22

Lab ID	:	CP-RW-2022-03-29-44
Project Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No:03 and 04 of Yelahanka Division (Package no: 09)
Agency	:	Sri.K.Venkata Raju, No:23, RMV 2nd Stage, Nagashettyhalli, Near Akai Public School, Bangalore - 560094.
Customer's Reference	:	BBMP/EE/YNK.D/EPMT-05/W.O/186/2020-21
Date of Receipt	:	12-04-22
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test	:	12-04-22

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	64	60 to 70
2	Softening Point, °C	51.2	Min. 40°C
3	Ductility, cm	98	Min. 75cm
4	Flash point, °C	245	Min. 220°C
	Fire point, °C	272	

* The results obtained are satisfactory as per standard requirements.

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DETERMINATION OF RATE OF SPREAD TACK COAT

Date: 11-05-22

Lab ID	:	CP-RW-2022-03-29-44
Project Name	:	Development of Roads and Drains at Attur, Ananthapura, 3rd Phase Sanitary Core Areas and Drilling of Borewells and Providing Pipeline at SC/ST Areas in Ward No 03 and 04 of Yelahanka Division (Package no: 09)
Agency	:	Sri K Venkata Raju. No 23. RMV 2nd Stage. Nagashettyhalli, Near Akar Public School. Bangalore - 560094
Customer Reference	:	BBMP/EE/YNK D/EPMT-05/W O/186/2020-21
Date of Receipt	:	10-05-22
Type of Mix	:	Tack coat
Date of test	:	10-05-22

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x 30	0.30 x 30
2	Area of Plate (a)	Sq mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.78	0.748
4	Final weight of plate after application of tack Coat (c)	Kg	0.803	0.771
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.023
6	Rate of spread of tack coat	Kg/sq m	0.256	0.256
7	Average	Kg/sq m	0.256	
8	Specified Limit	Kg/sq m	0.250 Kg/sq m	

* The results obtained are satisfactory as per standard requirements

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